Microbial diversity on paintings and engravings in Doña Trinidad Cave (Ardales, Spain)

F. Stomeo, L. Laiz, J.M. Gonzalez, C. Saiz-Jimenez

Instituto de Recursos Naturales y Agrobiología, CSIC, Sevilla, Spain
(RTPHC-CSIC)

ABSTRACT

The Cave of Doña Trinidad (Ardales, Malaga, Spain) contains numerous paintings and engravings dated back to 20,000 years. In this study, we study the microorganisms thriving on these paintings and engravings using molecular and culturing approaches.

Molecular methods were based on the detection of microorganisms from DNA and RNA extracted directly from minute samples collected at the cave and did not require the culture of these microorganisms. Culturing methods required the growth of these microorganisms on previously determined culture media. Media used in this study were appropriated for the growth of aerobic and anaerobic heterotrophs.

Results showed the presence of a large diversity of microorganisms detected from both molecular and culturing methods and a large proportion of them was presenting highest homology to so far uncultured microorganisms. Cultures allowed a detailed characterization of the function and capabilities of these microorganisms. The diversity found in this cave will be discussed focusing on the potential function of these microorganisms in the studied environment.

Corresponding author: keka@irnase.csic.es